June 2002

View box case--6 Giant cell tumor

I Masroor
Aga Khan University, imrana.masroor@aku.edu

R Hashmi

View Box Case – 6

I. Masroor,R. Hashmi (Radiology Department, Aga Khan University Hospital, Karachi.)

A 29 years old male presented with complaints of painful swelling of right knee and limitation of movement for 6 weeks. The laboratory findings were unremarkable. Plain film of the right knee showed an expansile soap-bubble pattern lytic lesion measuring 11.5x7cm involving the medial condyle of right femur in sub-articular location. There was thinning of overlying cortex without any breaks or periosteal reaction, with associated soft tissue swelling (Figure).

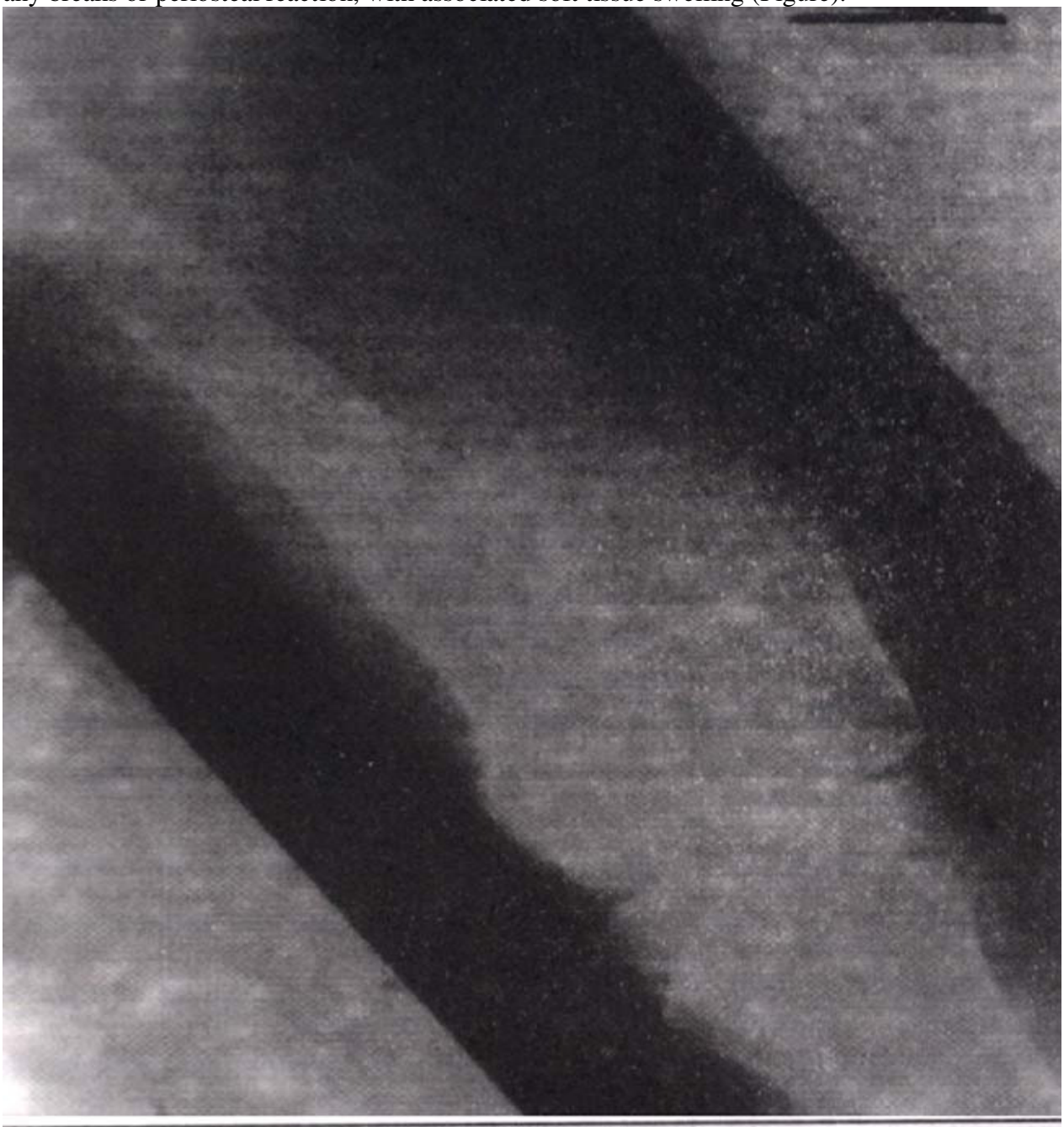

Figure. Right Knee AP view.

An MR examination for pre-operative mapping revealed replacement of medial condyle of femur by tumor tissue. There was extension of tumor into the joint space. The neurovascular bundle was displaced with no evidence of invasion. The tumor was hypointense on TI-weighted images and hyperintense on T2-weighted images and showed homogneous enhancement on post-contrast TI-weighted images. The tumor was resected and the defect in the bone filled in by bone chips.
Diagnosis: Giant cell tumor

Discussion

Giant cell tumor (osteoclastoma) is the second most common benign tumor of bone[1]. It typically presents between 20-35 years, with approximately two percent arising in the immature skeleton[2]. It arises from metaphysis of a long bone and 50% occur at knee. Flat bone involvement is seen particularly of pelvis and sacrum; 10 may recur, a few are premalignant or malignant.
The patient presents with pain in adjacent joint, a visible mass, swelling or a fracture. A giant cell tumor is made up of a large number of benign cells that form an aggressive tumor usually near the end of the bone near a joint. Plain films show an expansile soap bubble pattern eccentric lesion at end of long bone. Differential diagnosis
includes aneurysmal bone cysts and expansile lytic metastasis. The endosteal margin is not usually sclerotic and can often be hazy. A wider endosteal margin usually means a more aggressive tumor with a greater possibility of recurrence after curetting. There is thinning of overlying cortex from the expanding lesion. The cortex may be so thinned as to be unseen and this impression of soft tissue mass is not necessarily an indication of sarcoma. There is no periosteal reaction associated with this tumor. Computed tomography is the best technique for evaluating cortical breakthrough of potentially aggressive giant cell tumors[3]. It is also valuable in accurately assessing the intraosseous characteristics of tumor particularly in radiographically obscure lesions. Post-contrast images show vascularity of lesion and add further to diagnosis. It also helps in identifying pathological fractures in radiographically obscure situations. Magnetic resonance imaging shows a low signal on TI-weighted images and a high signal on T2-weighted images. Both images clearly delineate the intraosseous extent of lesion. Frequently the images of giant cell tumor have a mottled or non-homogeneous pattern resulting from areas of hemorrhage and/or necrosis with varying concentrations of water. The combination of radiograph, CT and MRI frequently gives more accurate information than any of the technique by themselves[3]. Treatment consists of curettage and packing with bone chips.

References

1.Lerner MH, Deluca SA. Giant cell tumor of bone. Am Fam Physi., 1991 ; 43: 882-84.
2.Buetow PC, Newman S, Kransdrof MJ. Giant cell tumor of tibia in a child presenting as an expansile metaphyseal lesion with fluid-fluid levels on MR. Magnetic Resonance Imaging 1990; 8: 341-44.
3.Tehranzadeh J, Murphy BJ, Mnayinneh W. Giant cell tumor of proximal tibia: CT and MR appearance. J. Comput. Assist. Tomor, 1989; 13: 282-86.